

1 1. A primary alkaline AA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 an anode within the housing; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.38.

1 2. The battery of claim 1, wherein the battery has
2 an $(S/V)^2$ value of greater than 0.42.

1 3. The battery of claim 1, wherein the battery has
2 an $(S/V)^2$ value of greater than 0.45.

1 4. A primary alkaline AAA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 an anode within the housing; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.70.

1 5. The battery of claim 4, wherein the battery has
2 an $(S/V)^2$ value of greater than 0.75.

1 6. The battery of claim 4, wherein the battery has
2 an $(S/V)^2$ value of greater than 0.8.

1 7. A primary alkaline AAAA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 an anode within the housing; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 1.2.

1 8. The battery of claim 7, wherein the battery has
2 an $(S/V)^2$ value of greater than 1.4.

1 9. The battery of claim 7, wherein the battery has
2 an $(S/V)^2$ value of greater than 1.5.

1 10. A primary alkaline C battery, comprising:
2 a housing;
3 a cathode within the housing;
4 an anode within the housing; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.110.

1 11. The battery of claim 10, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.120.

1 12. The battery of claim 10, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.125.

1 13. A primary alkaline D battery, comprising:
2 a housing;
3 a cathode within the housing;
4 an anode within the housing; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.065.

1 14. The battery of claim 13, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.07.

1 15. The battery of claim 13, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.075.

1 16. A primary alkaline AA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 a single cavity anode within the cathode; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.15.

1 17. The battery of claim 16, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.20.

1 18. The battery of claim 16, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.30.

1 19. A primary alkaline AAA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 a single cavity anode within the cathode; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.3.

1 20. The battery of claim 19, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.4.

1 21. The battery of claim 19, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.5.

1 22. A primary alkaline AAAA battery, comprising:
2 a housing;
3 a cathode within the housing;
4 a single cavity anode within the cathode; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.6.

1 23. The battery of claim 22, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.8.

1 24. The battery of claim 22, wherein the battery
2 has an $(S/V)^2$ value of greater than 1.0.

1 25. A primary alkaline C battery, comprising:
2 a housing;
3 a cathode within the housing;
4 a single cavity anode within the cathode; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.06.

1 26. The battery of claim 25, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.08.

1 27. The battery of claim 25, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.10.

1 28. A primary alkaline D battery, comprising:
2 a housing;
3 a cathode within the housing;
4 a single cavity anode within the cathode; and
5 a separator electrically separating the anode and
6 the cathode;
7 wherein the battery has an $(S/V)^2$ value of greater
8 than 0.03.

1 29. The battery of claim 28, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.04.

1 30. The battery of claim 28, wherein the battery
2 has an $(S/V)^2$ value of greater than 0.05.

1 31. The battery of claim 1, 4, 7, 10, 13, 16, 19,
2 22, 25, or 28 wherein the cathode comprises manganese
3 dioxide.

1 32. The battery of claim 1, 4, 7, 10, 13, 16, 19,
2 22, 25, or 28 wherein the anode comprises zinc.

1 33. The battery of claim 1, 4, 7, 10, 13, 16, 19,
2 22, 25, or 28 wherein the cathode comprises manganese
3 dioxide and the anode comprises zinc.

1 34. The battery of claim 1, 4, 7, 10, 13, 16, 19,
2 22, 25, or 28, wherein the anode comprises a lobed cavity
3 within the cathode.

1 35. The battery of claim 34, wherein the anode
2 includes only two lobes.

1 36. The battery of claim 34, wherein the anode
2 includes three lobes.

1 37. The battery of 34, wherein the anode includes
2 four lobes.

1 38. The battery of claim 34, wherein the anode
2 includes fives lobes.

1 39. The battery of claim 34, wherein the anode
2 includes nine lobes.

1 40. The battery of claims 1, 4, 7, 10, 13, 16, 19,
2 22, 25, or 28, wherein the anode includes multiple cavities
3 within the cathode.

1 41. The battery of claim 40, wherein the multiple
2 cavities comprise two D-shaped cavities.

1 42. The battery of claim 41, wherein the anode
2 further includes a connection between the two D-shaped
3 cavities.

1 43. The battery of claim 41, wherein the anode does
2 not include a connection between the D-shaped cavities.

1 44. The battery of claim 40, wherein the cavities
2 include two pie-shaped cavities.

1 45. The battery of claim 44, wherein the cavities
2 include three pie-shaped cavities.

1 46. The battery of claim 45, wherein the cavities
2 include four pie-shaped cavities.

1 47. A battery comprising:
2 a housing;
3 a first electrode within the housing;
4 a second electrode within the first electrode, the
5 second electrode including nine lobes; and
6 a separator between the first electrode and the
7 second electrode.

1 48. The battery of claim 47, wherein the housing is
2 cylindrical.

1 49. The battery of claim 47, wherein the second
2 electrode is an anode comprising zinc.

1 50. The battery of claim 47 or 49 wherein the first
2 electrode is a cathode comprising manganese dioxide.

1 *AB* 51. A battery comprising:
2 *AB* a housing;
3 a first electrode within the housing;
4 a second electrode within the first electrode, the
5 second electrode consisting essentially of a single cavity;
6 and
7 a separator between the first electrode and the
8 second cavity;
9 wherein the battery has a $(S/V)^2$ cathode OD v. cell
10 diameter value at least 0.01 above Plot A.

1 52. The battery of claim 51, wherein the battery
2 has a $(S/V)^2$ cathode OD v. cell diameter value at least 0.02
3 above Plot A.

1 53. A battery comprising:
2 a housing;
3 a first electrode within the housing;
4 a second electrode within the first electrode; and
5 a separator between the first electrode and the
6 second cavity;
7 wherein the battery has a $(S/V)^2$ cathode OD v. cell
8 diameter value at least 0.01 above Plot B.

1 54. The battery of claim 53, wherein the battery
2 has a $(S/V)^2$ cathode OD v. cell diameter value at least 0.01
3 above Plot A.